

Claims

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is as follows:

- 1 1. A ballast testing and monitoring apparatus for quick connection to a
2 fluorescent lamp assembly having a lamp system ballast and at least one fluorescent lamp,
3 said apparatus comprising:
 - 4 a casing having a plurality of light sources spaced apart along a top surface thereof;
 - 5 a test circuit positioned in said casing;
 - 6 a memory electrically connected to said test circuit;
 - 7 means for releasably electrically connecting said test circuit to a primary power source;
 - 8 means for releasably electrically connecting said test circuit to said lamp assembly
9 ballast and to said at least one lamp;
 - 10 means in said test circuit for obtaining startup voltage data from said lamp assembly
11 ballast for evaluation indicative of operability of said lamp assembly ballast; and
 - 12 means in said test circuit for storing a ballast fault record in said memory if said
13 evaluated startup voltage data indicates inoperability of said lamp assembly
14 ballast.

- 1 2. The ballast testing and monitoring apparatus as in claim 1 further
2 comprising:
 - 3 means in said test circuit for obtaining operation voltage data from said lamp assembly
4 ballast at a time after obtaining said startup voltage data for evaluation indicative
5 of operability of said lamp assembly ballast; and

6 means in said test circuit for storing another ballast fault record in said memory if said
7 evaluated operation voltage data indicates inoperability of said lamp system
8 ballast.

1 3. The ballast testing and monitoring apparatus as in claim 1 wherein:
2 said casing defines a plurality of apertures; and
3 said means for releasably electrically connecting said test circuit to said
4 lampassembly ballast includes a wire clip assembly situated in said
5 casing, said wire clip assembly including:
6 a first set of wire receiving clips positioned in accordance with respective
7 casing apertures, each of said first set of wire receiving clips being
8 configured to releasably receive a wire from said lamp system ballast;
9 and
10 a second set of wire receiving clips spaced from said first set of wire
11 receiving clips and positioned in accordance with said respective
12 casing apertures, each of said second set of wire receiving clips
13 configured to releasably receive a wire from said at least one lamp.

1 4. The ballast testing and monitoring apparatus as in claim 1 wherein said
2 means for releasably electrically connecting said test circuit to the lamp assembly ballast
3 includes a plug and socket connector.

1 5. The ballast testing and monitoring apparatus as in claim 1 further
2 comprising a secondary power source electrically connected to said test circuit, said

3 secondary power source energizing said test circuit when said primary power source is
4 disabled.

1 6. The ballast testing and monitoring apparatus as in claim 5 wherein said
2 secondary power source is a capacitor, said capacitor being charged when said primary power
3 source is enabled.

1 7. The ballast testing and monitoring apparatus as in claim 5 further
2 comprising:

3 means in said test circuit for obtaining lamp voltage test data from said at least one
4 lamp when said secondary power source is enabled for evaluation indicative of
5 operability of said at least one lamp; and

6 means in said test circuit for storing a lamp fault record in said memory if said
7 evaluated lamp voltage test data indicates inoperability of said at least one lamp.

1 8. The ballast testing and monitoring apparatus as in claim 7 further comprising:
2 means in said test circuit for energizing one of said plurality of light source if said
3 ballast fault record is stored in said memory; and
4 means in said test circuit for energizing another of said plurality of light sources if said
5 lamp fault record is stored in said memory.

1 9. The ballast testing and monitoring apparatus as in claim 1 further
2 comprising means in said test circuit for energizing one of said plurality of light sources if
3 said ballast fault record is stored in said memory.

1 10. A method for testing and monitoring the operability of a fluorescent lamp
2 assembly having a lamp assembly ballast and at least one fluorescent lamp, said method
3 comprising:

4 providing a logic circuit electrically connected to said lamp assembly ballast, to said at
5 least one lamp, and to said primary power source;
6 providing a memory electrically connected to said circuit;
7 providing data to said circuit for evaluation indicative of operability of said lamp
8 assembly ballast when said primary power source is enabled;
9 storing a ballast fault record in said memory if the evaluated ballast data indicates
10 inoperability of said lamp assembly ballast;
11 providing a secondary power source electrically connected to said circuit, said
12 secondary power source providing power to said circuit when said primary power
13 source is disabled;
14 providing data to said circuit for evaluation indicative of operability of said at least one
15 fluorescent lamp when said secondary power source is enabled; and
16 storing a lamp fault record in said memory if the evaluated fluorescent lamp data
17 indicates inoperability of said at least one fluorescent lamp.

1 11. The method as in claim 10 further comprising:

2 providing a plurality of LED's electrically connected to said logic circuit;
3 upon request for a diagnostic test, energizing one of said plurality of LED's if said
4 ballast fault record is stored in said memory;
5 upon request for said diagnostic test, energizing another of said plurality of LED's if
6 said lamp fault record is stored in said memory.

1 12. The method as in claim 10 wherein said step of providing data indicative of
2 operability of said lamp assembly ballast includes:
3 measuring a test voltage passing through said lamp assembly ballast at a first
4 predetermined time for evaluation of an operability of said lamp assembly ballast
5 at startup;
6 measuring another test voltage passing through said lamp assembly ballast at a second
7 predetermined time for evaluation of an operability of said lamp assembly ballast
8 after startup;
9 providing said test voltage and said another test voltage to said circuit for comparison
10 with predetermined strike and operation voltages, respectively;
11 storing said ballast fault record in said memory if said test voltage is less than said
12 predetermined strike voltage; and
13 storing said ballast fault record in said memory if said another test voltage is greater
14 than said predetermined operation voltage.

1 13. The method as in claim 10 further comprising enabling said secondary
2 power source when said primary power source is disabled.

1 14. The method as in claim 10 wherein said secondary power source is a
2 capacitor.

1 15. The method as in claim 14 further comprising charging said capacitor when
2 said primary power source is enabled.

1 16. The method as in claim 10 wherein said secondary power source is a
2 battery.

1 17. The method as in claim 10 wherein said step of providing data to said
2 circuit indicative of operability of said at least one fluorescent lamp includes:

3 passing a voltage across a filament of said at least one fluorescent lamp;
4 measuring said passed voltage;
5 providing said passed voltage to said test circuit for evaluation indicative of operability
6 of said at least one fluorescent lamp; and
7 storing said lamp fault record in said memory if said evaluated passed voltage is
8 indicative of inoperability of said at least one fluorescent lamp.

1 18. A ballast testing and monitoring apparatus for quick connection to a
2 fluorescent lamp assembly having a lamp system ballast and at least one fluorescent lamp,
3 said apparatus comprising:
4 a casing;
5 a test circuit positioned in said casing;
6 a memory electrically connected to said test circuit;
7 means for releasably electrically connecting said test circuit to a primary power source;
8 a wire clip assembly situated in said casing and having a plurality of wire receiving
9 clips for releasably receiving wires from said lamp assembly ballast and said at
10 least one lamp, said wire receiving clips electrically connecting said wires;
11 a plurality of wire release buttons coupled to respective wire receiving clips, each wire
12 release button including a color indicia corresponding to a color of a respective
13 wire; and
14 means in said test circuit for obtaining voltage data from said lamp assembly ballast for
15 evaluation indicative of operability of said lamp assembly ballast.

1 19. The ballast testing and monitoring apparatus as in claim 18 further
2 comprising a secondary power source electrically connected to said test circuit, said
3 secondary power source energizing said test circuit when said primary power source is
4 disabled.

1 20. The ballast testing and monitoring apparatus as in claim 19 further
2 comprising:

3 means in said test circuit for obtaining lamp voltage test data from said at least one
4 lamp when said secondary power source is enabled for evaluation indicative of
5 operability of said at least one lamp; and
6 means in said test circuit for storing a lamp fault record in said memory if said
7 evaluated lamp voltage test data indicates inoperability of said at least one lamp.